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A NUPTIAL PERFORMANCE OF THE SAGE COCK.

BY FRANK BOND.

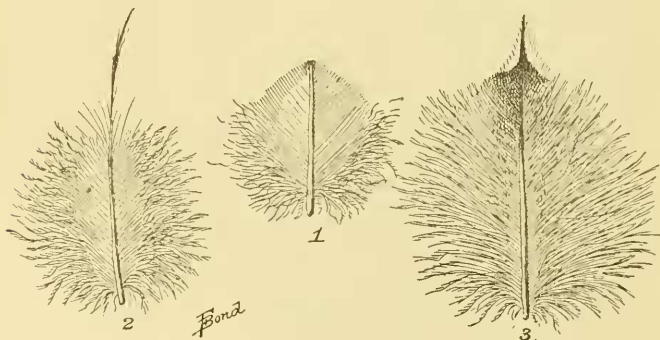
*Plate XII.*

THE peculiar feathers of the breast of the Sage Cock (*Centrocercus urophasianus*) are more or less faithfully described by every ornithologist who has published a sketch of the bird; but as yet I have seen no explanation of the cause of the wearing away of the barbs and even shafts of the feathers of the lower neck. These feathers are worn away during that period of sexual excitement which causes many birds to develop odd and eccentric habits until the nuptial season is passed. The Sage Cock is unable to produce the musical booming sound of the Prairie Chicken, the forcible expulsion of the air from the sacks producing an inconsequential chuckling noise only; nevertheless the bird offers reasonable entertainment to any individual who will rise early and stroll out into the sage brush a hundred yards from the camp fire.

During the months of April and May the Sage Cocks are usually found in small flocks of a half dozen or more, stalking about with tails erect and spread after the manner of the strutting turkey cock, but I have never seen the Grouse dragging their wings upon the ground, turkey fashion, and in the manner described by Dr. Newberry in the quotation from this author

found on page 406 of Dr. Coues's 'Birds of the Northwest,' nor have I ever found a wing of a Sage Cock, in this or any other season, which exhibited the slightest wearing away of the primaries. Instead of dragging its wings upon the ground the Sage Cock will enormously inflate the air sacks of the neck until the whole neck and breast is balloon-like in appearance, then stooping forward, almost the entire weight of the body is thrown upon the distended portion and the bird slides along on the bare ground or short grass for some distance, the performance being concluded by the expulsion of the air from the sacks with a variety of chuckling, cackling or rumbling sounds. This performance is continued probably daily, during the pairing and nesting season, and of course the feathers are worn away by the constant friction.

The brush drawing (Plate XII) shows the position taken by the Sage Cock while engaged in the eccentric performance described above, while the line drawings show the effect of the sliding friction upon the feathers of the inflated area. These drawings (Figs. 1-3) were made of feathers taken from an old Sage Cock killed in December and the question arises— are these feathers ever moulted, and if so, when? Fig. 1 is the type of feather which almost surrounds the air sacks, when the same are exhausted,



for the space of an inch or more. These are evidently worn half away. Fig. 2 is a type of the next circlet below, and Fig. 3 of those just above (or just below when the bird stoops forward)

the black feathers of the breast which are untouched. The black and naked barbs shown in Fig. 2 give that portion of the breast its hairy or bristly appearance.

An effort to assign a cause for this peculiar habit of the Sage Cock would be entering the purely speculative field, but the sliding of the widely distended air sacks over an uneven surface, together with the additional rumbling produced by the stiffened worn-off feathers, undoubtedly produce, to the ears of the bird at least, a volume of sound that is simply tremendous. A spectator, however, can hear nothing until the air sacks are collapsed.

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### 'APTOSOCHROMATISM.'

BY J. A. ALLEN.

IN 'Science' of Feb. 23, 1900 (N. S., XI, pp. 292-299) Mr. F. J. Birtwell describes at considerable length, what he considers a case of 'The Occurrence of Aptosochromatism in *Passerina cyanea*.' He says: "The following remarks upon Aptosochromatism of *Passerina cyanea*, although of insufficient importance to establish the phenomenon of color change without moult as a constant occurrence in the species, are conclusive enough, I am convinced, to prove the possibility of such a change, and are merely offered as such for what they may be worth." Several paragraphs, by way of introduction, relate to the general subject, in which Mr. Birtwell regrets that "Individual error and dogmatism have greatly retarded honest effort in this most important branch of ornithological science. It is a singular fact that certain individuals have conceived the idea that a feather once having passed its premature condition is utterly disconnected with the vital system of the bird, and such individuals cling to this belief with a tenacity wonderful to behold." His remarks, he tells us, "are based chiefly upon observations conducted during the fall, winter, and early spring of 1898-99, upon a captive bird." He presents a table